EXHIBIT 20
(Excerpted)

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Lambourne et al.

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(54) **METHOD AND APPARATUS FOR ADJUSTING VOLUME LEVELS IN A MULTI-ZONE SYSTEM**

(75) Inventors: **Robert A. Lambourne**, Santa Barbara, CA (US); **Nicholas A. J. Millington**, Santa Barbara, CA (US)

(73) Assignee: **Sonos, Inc.**, Santa Barbara, CA (US)

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(60) Provisional application No. 60/490,768, filed on Jul. 28, 2003.

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G06F 17/00 (2006.01)

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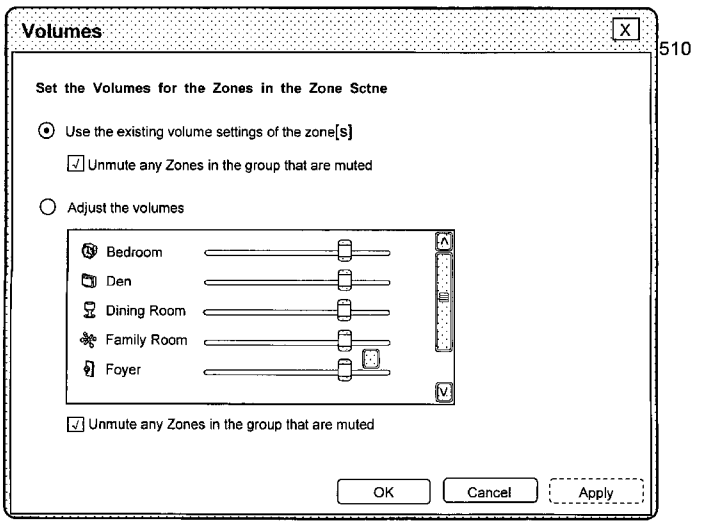
Primary Examiner — Paul McCord
(74) *Attorney, Agent, or Firm* — TechLaw LLP; Robert J. Irvine, III

(57) **ABSTRACT**

A multimedia controller including a processor, the controller configured to: provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is configured to playback a multimedia output from a multimedia source; accept an input to facilitate formation of the player group, indicating that at least two of the players in the local area network are to be included in the player group; for each of the plurality of players within the player group, accept an input to adjust a volume associated with the player, that causes the player to adjust its volume; and accept an input to adjust a volume associated with the player group, wherein the input to adjust the volume associated with the group causes the players in the player group to adjust their volumes.

20 Claims, 14 Drawing Sheets



managing and controlling groups in the system, de-grouping a group or adjusting audio volume of individual players or a group of players.

The present invention may be implemented in many forms including software, hardware or a combination of both. According to one embodiment, the present invention is directed to a method for groupings in a multi-zone media system, the method comprises providing a mechanism to allow a user to determine which players in the system to be associated with a theme representing a group; and configuring the theme with parameters pertaining to the players, wherein the theme is activated at anytime or a specific time so that the players react in a synchronized manner. The players in a scene are synchronized to play a multimedia file when the scene is activated.

According to another embodiment, the present invention is directed to a method for groupings in a multi-zone media system, the method comprises providing a user interface to allow a user to determine which players in the system to be associated with a theme representing a group, the user interface showing all available players at the time the user interface is created; allowing the user to visually select one of the players to be a first member of the theme; allowing the user to add more of the available players to the theme, if desired; and configuring the theme with parameters pertaining to the players. The theme may be activated at anytime or a specific time so that the players react in a synchronized manner.

According to still another embodiment, the present invention is directed to an entertainment system for grouping players, the system comprises: a plurality of players, each located in one zone; and a controller providing a mechanism to allow a user to select which of the players to be associated with a theme representing a group; and configure the theme with parameters pertaining to the selected players, wherein the theme is activated at anytime or a specific time so that the selected players react in a synchronized manner. As a result, the selected players are synchronized to play a multimedia that is in a digital format and retrieved from a source over a network.

One of the objects, features, and advantages of the present invention is to remotely control a plurality of multimedia players in a multi-zone system, playing and controlling the audio source synchronously if the players are grouped together, or playing and controlling the audio source individually if the players are disassociated with each other.

Other objects, features, and advantages of the present invention will become apparent upon examining the following detailed description of an embodiment thereof, taken in conjunction with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

FIG. **1** shows an exemplary configuration in which the present invention may be practiced;

FIG. **2**A shows an exemplary functional block diagram of a player in accordance with the present invention;

FIG. **2**B shows an example of a controller that may be used to remotely control one of more players of FIG. **2**A;

FIG. **2**C shows an exemplary internal functional block diagram of a controller in accordance with one embodiment of the present invention;

FIG. **3**A provides an illustration of one zone scene, where the left column shows the starting zone grouping—all zones are separate, the column on the right shows the effects of grouping the zones to make a group of 3 zones named after "Morning";

FIG. **3**B shows that a user defines multiple groups to be gathered at the same time;

FIG. **3**C shows an exemplary user interface (UI) of individual zones in a house;

FIG. **3**D shows a user interface as a result of the use activating "link zones" of FIG. **3**C;

FIG. **3**E shows a user interface after the user has selected some of the available zone players into the scene;

FIG. **4** shows an exemplary user interface that may be displayed on a controller or a computer of FIG. **1**;

FIG. **5**A shows another user interface to allow a user to form a scene;

FIG. **5**B shows still another user interface to allow a user to form a scene;

FIG. **5**C shows a user interface to allow a user to adjust a volume level of the zone players in a zone scene individually or collectively; and

FIG. **6** shows a flowchart or process of providing a player theme or a zone scene for a plurality of players, where one or more of the players are placed in a zone.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed description of the invention is presented largely in terms of procedures, steps, logic blocks, processing, and other symbolic representations that directly or indirectly resemble the operations of data processing devices coupled to networks. These process descriptions and representations are typically used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art. Numerous specific details are set forth in order to provide a thorough understanding of the present invention. However, it will become obvious to those skilled in the art that the present invention may be practiced without these specific details. In other instances, well known methods, procedures, components, and circuitry have not been described in detail to avoid unnecessarily obscuring aspects of the present invention.

Reference herein to "one embodiment" or "an embodiment" means that a particular feature, structure, or characteristic described in connection with the embodiment can be included in at least one embodiment of the invention. The appearances of the phrase "in one embodiment" in various places in the specification are not necessarily all referring to the same embodiment, nor are separate or alternative embodiments mutually exclusive of other embodiments. Further, the order of blocks in process flowcharts or diagrams representing one or more embodiments of the invention do not inherently indicate any particular order nor imply any limitations in the invention.

Referring now to the drawings, in which like numerals refer to like parts throughout the several views. FIG. **1** shows an exemplary configuration **100** in which the present invention may be practiced. The configuration may represent, but not be limited to, a part of a residential home, a business building or a complex with multiple zones. There are a number of multimedia players of which three examples **102**, **104** and **106** are shown as audio devices. Each of the audio devices may be installed or provided in one particular area or zone and hence referred to as a zone player herein.

As used herein, unless explicitly stated otherwise, an audio source or audio sources are in digital format and can be transported or streamed over a data network. To facilitate the

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(12) EX PARTE REEXAMINATION CERTIFICATE (10755th)

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(54) **METHOD AND APPARATUS FOR ADJUSTING VOLUME LEVELS IN A MULTI-ZONE SYSTEM**

(75) Inventors: **Robert A. Lambourne**, Santa Barbara, CA (US); **Nicholas A. J. Millington**, Santa Barbara, CA (US)

(73) Assignee: **SONOS, INC.**, Santa Barbara, CA (US)

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(60) Provisional application No. 60/490,768, filed on Jul. 28, 2003.

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G06F 17/30	(2006.01)

(52) **U.S. Cl.**
CPC ***G06F 17/30283*** (2013.01); ***G11B 27/00*** (2013.01)

(58) **Field of Classification Search**
CPC G06F 17/30283; G06F 17/30265; G06F 17/30182; G06F 17/30056; G11B 27/00; G11B 2020/10574
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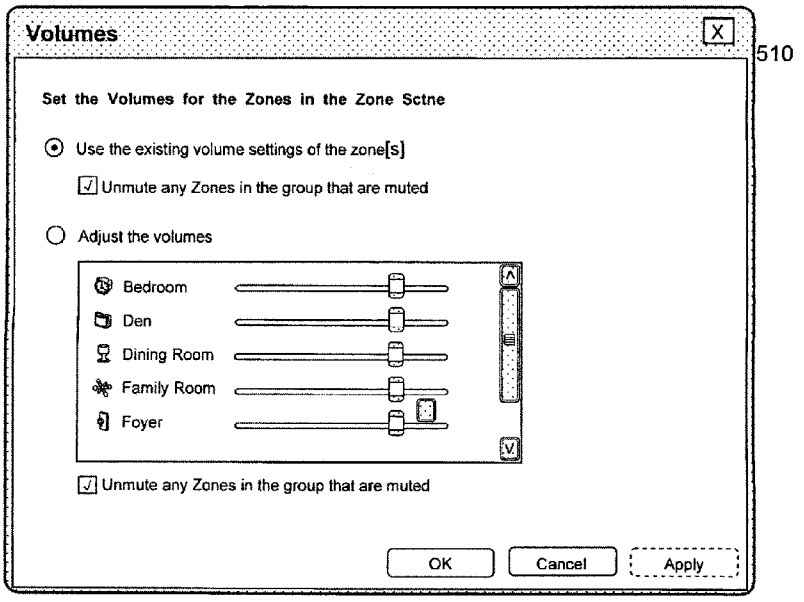
To view the complete listing of prior art documents cited during the proceeding for Reexamination Control Number 90/013,423, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner — Sam Rimell

(57) **ABSTRACT**

A multimedia controller including a processor, the controller configured to: provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is configured to playback a multimedia output from a multimedia source; accept an input to facilitate formation of the player group, indicating that at least two of the players in the local area network are to be included in the player group; for each of the plurality of players within the player group, accept an input to adjust a volume associated with the player, that causes the player to adjust its volume; and accept an input to adjust a volume associated with the player group, wherein the input to adjust the volume associated with the group causes the players in the player group to adjust their volumes.



EX PARTE REEXAMINATION CERTIFICATE

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1**, **3**, **4**, **6**, **7**, **8**, **10**, **11**, **13**, **14**, **15** and **17-20** are determined to be patentable as amended.

Claims **2**, **5**, **9**, **12** and **16**, dependent on an amended claim, are determined to be patentable.

1. A multimedia controller including a processor, the controller configured to:

provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from a multimedia source;

accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group *for synchronized playback of a multimedia output from the same multimedia source*;

for [each of the plurality of players within] *any individual player in* the player group, accept via the user interface [an] *a player-specific* input to adjust a volume [associated with the] *of that individual* player, wherein the *player-specific* input to adjust the volume [associated with the] *of that individual* player causes [the corresponding independent playback device] *that individual player* to adjust its volume; and

accept via the user interface [an] *a group-level* input to adjust a volume associated with the player group, wherein the *group-level* input to adjust the volume associated with the *player* group causes [the corresponding independent playback devices] *each of the players* in the player group to adjust [their volumes] *its respective volume*.

3. The multimedia controller of claim **1**, wherein the controller is further configured to accept via the user interface [an] *a group-level* input to mute the volume of the player group, wherein the *group-level* input to mute *the volume of* the player group causes *each of* the players [within] *in* the player group to mute [their] *its respective* volume.

4. The multimedia controller of [claim **3**] *claim 1*, wherein the *group-level* input to [mute] *adjust the volume associated with* the player group *further* causes [the players in the player group to adjust their volumes further comprises]:

the controller [sending] *to send* an instruction to one of the players in the player group, the instruction indicating that the volumes of each of the players in the player group should be adjusted in scale.

6. The multimedia controller of claim **1**, wherein the controller is further configured to accept via the user interface [an] *a player-specific* input to mute the volume of [one of the players within] *an individual player in* the player group, wherein the *player-specific* input to mute [one of the players within] *the volume of an individual player in* the player group causes [the player within the player group] *that individual player* to mute its volume.

7. The multimedia controller of claim **1**, wherein the controller is further configured to save a configuration associated with the player group, wherein the configuration includes one or more of the following parameters: a) a volume level for each player in the player group, b) a mute or unmute setting for each player in the player group, and [d)] *c*) an equalization setting for each player in the player group.

8. A non-transitory computer readable storage medium including a set of instructions for execution by a processor, the set of instructions, when implemented, implement a controller configured to:

provide a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from a multimedia source;

accept via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group *for synchronized playback of a multimedia output from the same multimedia source*;

for [each of the plurality of players within] *an individual player in* the player group, accept via the user interface [an] *a player-specific* input to adjust a volume [associated with the] *of that individual* player, wherein the *player-specific* input to adjust the volume [associated with the] *of that individual* player causes [the corresponding independent playback device] *that individual player* to adjust its volume; and

accept via the user interface [an] *a group-level* input to adjust a volume associated with the player group, wherein the *group-level* input to adjust the volume associated with the *player* group causes [the corresponding independent playback devices] *each of the players* in the player group to adjust [their volumes] *its respective volume*.

10. The computer readable medium of claim **8**, wherein the controller is further configured to accept via the user interface [an] *a group-level* input to mute the volume of the player group, wherein the *group-level* input to mute *the volume of* the player group causes *each of* the players [within] *in* the player group to mute [their] *its respective* volume.

11. The computer readable medium of [claim **10**] *claim 8*, wherein the *group-level* input to [mute] *adjust the volume associated with* the player group *further* causes [the players in the player group to adjust their volumes comprises]:

the controller [sending] *to send* an instruction to one of the players in the player group, the instruction indicating that the volumes of each of the players in the player group should be adjusted in scale.

13. The computer readable medium of claim **8**, wherein the controller is further configured to accept via the user interface [an] *a player-specific* input to mute the volume of [one of the players within] *an individual player in* the player group, wherein the *player-specific* input to mute [one of the players within] *the volume of an individual player in* the player group causes [the player within the player group] *that individual player* to mute its volume.

14. The computer readable medium of claim **8**, wherein the controller is further configured to save a configuration associated with the player group, wherein the configuration includes one or more of the following parameters: a) a volume

level for each player in the player group, b) a mute or unmute setting for each player in the player group, and [d)] *c*) an equalization setting for each player in the player group.

15. A method comprising:

displaying a user interface for a player group, wherein the player group includes a plurality of players in a local area network, and wherein each player is an independent playback device configured to playback a multimedia output from a multimedia source;

receiving via the user interface an input to facilitate formation of the player group, wherein the input to facilitate formation of the player group indicates that at least two of the plurality of players in the local area network are to be included in the player group *for synchronized playback of a multimedia output from the same multimedia source*;

receiving via the user interface [an] *a player-specific* input to adjust a volume [associated with one of the players within] *of an individual player in* the player group, and responsively instructing [the corresponding independent playback device] *that individual player* to adjust its volume; and

receiving via the user interface [an] *a group-level* input to adjust a volume associated with the player group, and responsively instructing [the corresponding independent playback devices] *each of the players* in the player group to adjust [their volumes] *its respective volume*.

17. The method of claim **15**, further comprising:

receiving via the user interface [an] *a group-level* input to mute the volume of the player group, and responsively instructing *each of* the players [within] *in* the player group to mute [their] *its respective* volume.

18. The method of claim **15**, wherein instructing *each of* the players in the player group to adjust [their volumes] *its respective volume comprises*:

sending an instruction to one of the players in the player group, the instruction indicating that the volumes of each of the players in the player group should be adjusted in scale.

19. The method of claim **15**, further comprising receiving an input to *assign a* name *to* the player group, and responsively assigning the name to the player group.

20. The method of claim **15**, further comprising receiving via the user interface [an] *a player-specific* input to mute the volume of [one of the players within] *an individual player in* the player group, and responsively instructing [the player within the player group] *that individual player* to mute its volume.

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